



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,828	09/24/2003	Ian Clarke	EETP002	6992

20178 7590 03/22/2007  
EPSON RESEARCH AND DEVELOPMENT INC  
INTELLECTUAL PROPERTY DEPT  
2580 ORCHARD PARKWAY, SUITE 225  
SAN JOSE, CA 95131

EXAMINER
----------

COUSO, YON JUNG

ART UNIT	PAPER NUMBER
----------	--------------

2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/669,828

Applicant(s)

CLARKE ET AL.

Examiner

Yon Couso

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 26-38 is/are rejected.
- 7) ☒ Claim(s) 9-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/24/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 32, 33, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Katayama et al (US Patent No. 6,424,752).

As for claim 1, Katayama teaches a method of creating a panorama image from a series of source images comprising the steps of: registering adjoining pairs of images in the series based on common features within the adjoining pairs of images (column 6, lines 1-16); estimating a transform between each adjoining pair of images using the common features (column 6, lines 17-21); projecting each image onto a designated image in the series using the estimated transforms associated with the image and with images between the each image and the designated image (column 7, line 34-column 8, line 10); and combining overlapping portions of the projected images to form the panorama image (column 6, lines 22-30).

As for claim 2, Katayama teaches that during the registering, matching corners in adjoining images are determined (column 9, lines 1-8).

As for claim 32, Katayama teaches a digital image editing tool for creating a panorama image from a series of source images comprising: means for registering adjoining pairs of images in the series based on common features within the adjoining pairs of images (column 6, lines 1-16); means for estimating transforms between adjoining pairs of images using the common features (column 6, lines 17-21); means for

Art Unit: 2624

projecting each image onto a designated image in the series using the estimated transforms associated with the image and with images between the each image and the designated image (column 7, line 34-column 8, line 10); and means for combining overlapping portions of the projected images to form the panorama image (column 6, lines 22-30).

As for claim 33, Katayama teaches that the means for registering matches corners in adjoining pairs of images (column 9, lines 1-8).

As for claim 37, Katayama teaches a computer readable medium embodying a computer program for creating a panorama image from a series of source images, the computer program including: computer program code for registering adjoining pairs of images in the series based on common features within the adjoining pairs of images (column 6, lines 1-16); computer program code for estimating a transform between each adjoining pair of images using the common features (column 6, lines 17-21); computer program code for projecting each image onto a designated image in the series using the estimated transforms associated with the image and with images between the each image and the designated image (column 7, line 34-column 8, line 10); and computer program code for combining overlapping portions of the projected images to form the panorama image (column 6, lines 22-30).

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katayama et al (US Patent No. 6,424,752) in view of Xiong (US Patent No. 6,359,617)

As for claim 3, Katayama teaches an affine transformation as one example of coordinate transformation. Xiong teaches a projective transform (abstract, lines 1-10). It would have been obvious to one of ordinary skill in the art, given the reference at the time the invention was, to incorporate projective transform into Katayama because affine transformation not only can be read as projective transformation as implied in Xiong at column 10, lines 16-27, but also Katayama clearly states that an affine transformation as one example of coordinate transformation used in the disclosure.

As for claim 4, Xiong teaches that after the estimating the transform is re-estimated using pixels in the adjoining pairs of images that do not move prior to the projecting (column 5, lines 14-37).

As for claim 5, Xiong teaches that during the combining, overlapping portions of the projected images are frequency blended (abstract, lines 19-24 and column 7, line 47-column 8, line 17).

As for claim 6, Xiong teaches matching corner registration is used to error correct the projecting (abstract, lines 16-20 and column 14, lines 46-62).

As for claim 7, Xiong teaches overlapping portions of the projected images are frequency blended (abstract, lines 19-24 and column 7, line 47-column 8, line 17).

As for claim 8, Katayama teaches that during the estimating, one of a projective, affine and translation transform is estimated (column 7, lines 55-67).

3. Claims 26-31, 34, 35, 36, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Xiong (US Patent No. 6,359,617).

As for claim 26, Xiong teaches a method of creating a panorama image from a series of source images comprising the steps of: registering corners in each adjoining pair of images in the series (abstract, lines 16-20; column 10, lines 9-16; and column 14, lines 2-6); using the registered corners to estimate transforms detailing the transformation between each adjoining pair of images (column 10, line 16-column 12, line 31 and column 14, lines 46-48); re-estimating the transforms using non-moving pixels in the adjoining pairs of images (column 12, line 32-column 13, line 67); multiplying series of transforms to project each image onto the center image of the series and error correcting the projections using the registered corners (column 12, line 32-column 13, line 67); and frequency blending the overlapping regions of the projected

images to yield the panorama image (abstract, lines 19-24; column 7, line 47-column 8, line 17; and column 14, line 1-column 16, line 7).

As for claim 27, Xiong teaches during the frequency blending, different frequency content of the overlapping regions are blended with differing weighting functions (column 7, line 47-column 8, line 17).

As for claim 28, Xiong teaches during the estimating and re-estimating, projective transforms are estimated (column 12, line 32-column 13, line 67).

As for claim 29, Xiong teaches during the estimating if projective transforms having an accuracy above a threshold cannot be determined, translations are estimated and re-estimated (column 12, line 32-column 13, line 67).

As for claim 30, Xiong teaches during the estimating and re-estimating, affine transforms are estimated (column 12, line 32-column 13, line 67).

As for claim 31, Xiong teaches during the estimating if projective transforms having an accuracy above a threshold cannot be determined, translations are estimated and re-estimated (column 12, line 32-column 13, line 67).

As for claim 34, Xiong teaches that the means for estimating re-estimates each transform using pixels in the adjoining pairs of images that do not move (column 12, line 32-column 13, line 67).

As for claim 35, Xiong teaches that the means for combining frequency blends overlapping portions of the projected images (column 14, line 1-column 16, line 7).



As for claim 36, Xiong teaches that the means for estimating estimates one of a projective, affine and translation transform (column 10, lines 15-24 and column 12, line 32-column 13, line 67).

As for claim 38, Xiong teaches a computer readable medium embodying a computer program for creating a panorama image from a series of source images, the computer program including: computer program code for registering corners in each adjoining pair of images in the series (abstract, lines 16-20; column 10, lines 9-16; and column 14, lines 2-6); computer program code for using the registered corners to estimate transforms detailing the transformation between each adjoining pair of images (column 10, line 16-column 12, line 31 and column 14, lines 46-48); computer program code for re-estimating the transforms using nonmoving pixels in the adjoining pairs of images (column 12, line 32-column 13, line 67); computer program code for multiplying series of transforms to project each image onto the center image of the series and error correcting the projections using the registered corners (column 12, line 32-column 13, line 67); and computer program code for frequency blending the overlapping regions of the projected images to yield the panorama image (abstract, lines 19-24; column 7, line 47-column 8, line 17; and column 14, line 1-column 16, line 7).

4. Claims 9-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

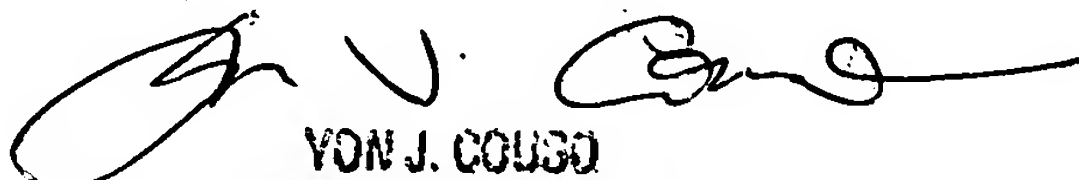


Art Unit: 2624

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yon Couso whose telephone number is (571) 272-7448. The examiner can normally be reached on Monday through Friday from 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis, can be reached on (571) 272-6928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



YON J. COUSO  
PRIMARY EXAMINER

YJC

March 15, 2007